

(12) UK Patent Application (19) GB (11) 2 299 884 (13) A

(43) Date of A Publication 16.10.1996

(21) Application No 9507752.5

(22) Date of Filing 13.04.1995

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(51) INT CL⁶
H04Q 7/06 7/20

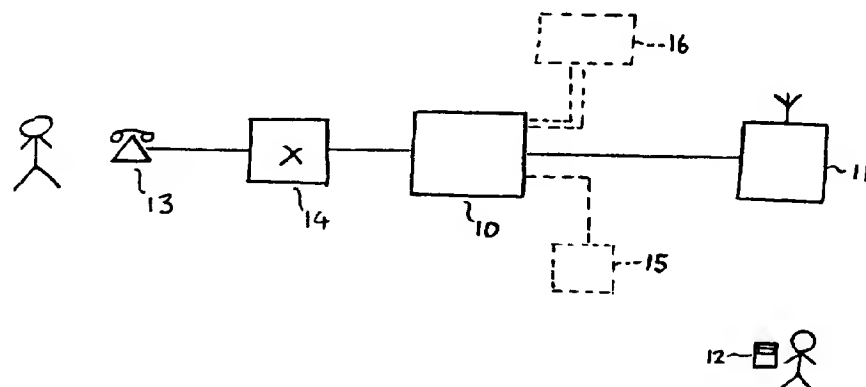
(52) UK CL (Edition O)
G4H HNP H1A H13D H14A H14D H14G H60
H4K KF42
U1S S2196

(56) Documents Cited
GB 2124419 A

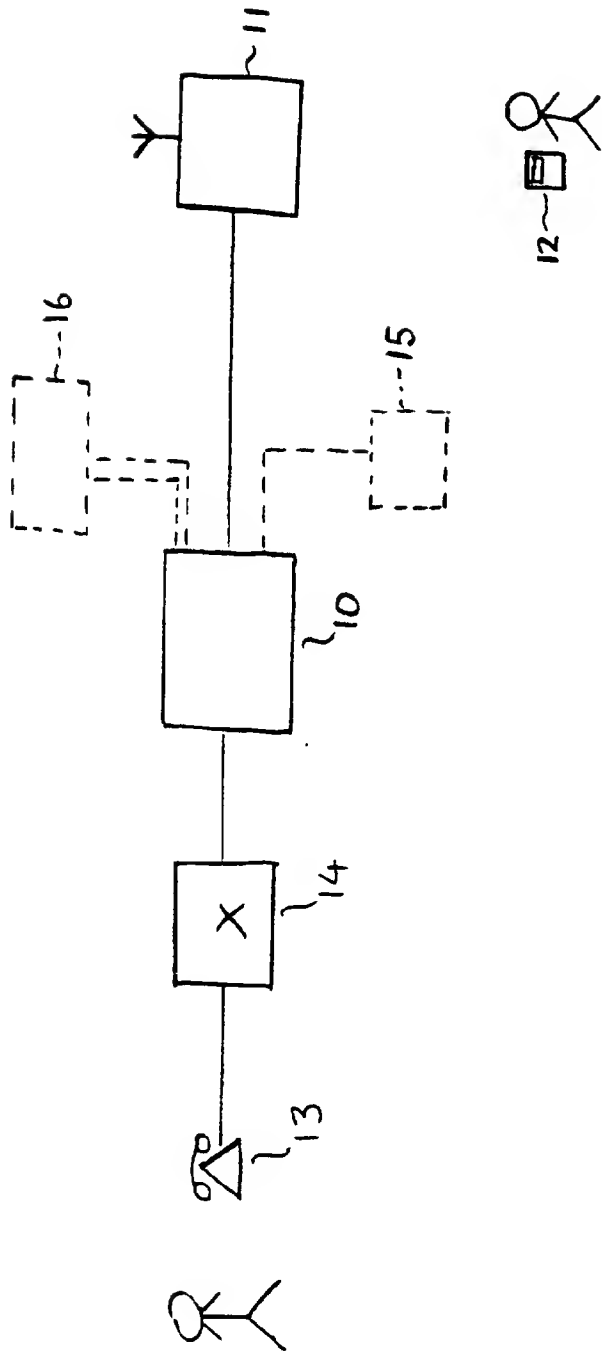
(58) Field of Search
UK CL (Edition N) G4H HNP
INT CL⁶ H04Q

(54) Communication systems

(57) In a communication system allowing alphanumeric messages to be entered on the keypad of a telephone 13, for onward transmission by a transmitter 11 to a selected receiver 12 for display on the receiver, a telephony server 10 provides confirmation of correct message entry by speaking back the complete message or parts of the message to the caller entering the message. The alphanumeric message can be entered on the keypad by the use of a numeric code system in which numbers correspond to letters, words and/or phrases, and the telephony server 10 decodes and composes the message prior to speaking back the message for confirmation.



GB 2 299 884 A



COMMUNICATION SYSTEMS

This invention relates to communication systems which can be used to send alphanumeric messages from a telephone terminal to a desired destination.

Known communication systems include selective call or paging systems which generally use automatic means for sending tone or numeric messages to a receiver and manual means to send alphanumeric messages to an alphanumeric receiver. However, some systems exist which allow letter input from an ordinary MF (multi-frequency) telephone using a predefined alphanumeric code.

As speech recognition capability improves, there exists the possibility of automatic input of pager messages, but given the large potential vocabulary and large variation found between native speakers this approach is not yet considered fully practicable.

In one known paging system, automated services exist for numeric and alphanumeric pagers that work as follows. If a subscriber wishes a numeric pager user to telephone them, they dial a telephone number consisting of a predefined prefix followed by the number of the required pager. Upon answer they then press the star key twice. As the system captures the caller's calling line identity, their telephone number is then transmitted to the numeric pager. This is a very fast and effective means of transmitting the caller's telephone number, but does not allow specific numeric or alphanumeric messages to be sent. For subscribers with alphanumeric pagers, it is possible to enter a message using two keystrokes for each letter; however, this system suffers from a number of disadvantages as the caller receives no feedback on the message input. This lack of feedback and flexibility therefore make the service difficult for widespread use.

In the United Kingdom, British Telecom operates a paging bureau which allows alphanumeric messages to be sent to any alphanumeric pager. This service provides for the caller to speak the required message to a bureau operator, who then enters the message via a keyboard for transmission to the requested pager. The need to route all alphanumeric messages through a bureau operator leads to relatively high operating costs which are then reflected in the pager user's service charges.

Traditionally, pagers have been available on a subscription basis with calls to the service priced relatively cheaply. However, a number of new service offerings are now available and one of these, known as "Caller Party Pays" paging, allows a pager user to buy a pager with
5 one-off payment, with the service revenue being gained from the calling party initiating message transmission, calls being made to premium rate numbers from which the paging operator receives a share of the call revenue. This approach has allowed numeric pagers to be available on a non-subscription basis and generally numeric messages can be input
10 from any telephone using either MF signalling or speech recognition of the digits, i.e. speech recognition using a limited vocabulary in order to achieve good recognition performance.

Current systems do not provide a mechanism for widespread use of Caller Party Pays paging for alphanumeric pagers since the provision of
15 bureau operators in such a system would result in the costs of the calls being too high for widespread use.

According to the invention there is provided a communication system comprising means for decoding alphanumeric messages entered by the use of telephone dialling means, and means for transmitting the
20 alphanumeric messages to selected receivers having message displays, wherein the message decoding means comprises a telephony server operable to read back messages entered by the telephone dialling means for confirmation of correct entry.

According to the invention there is also provided an automatic
25 telephony system consisting of a telephony server connected to the telephone network and also connected to a paging transmission system, wherein a caller wishing to send an alphanumeric paging message automatically to a pager can access the telephony server over the telephone network and in response to instructions and prompts, if these
30 are required, can input codes for either complete messages, complete words including their cognate forms, or individual letters in order to send complete alphanumeric messages to a pager.

The telephony server provides a means of interacting in an effective manner with the caller and, in the preferred embodiment, the
35 caller may select letters, words or phrases using MF signalling from the telephone keypad, with confirmation of input provided at the letter, word or phrase level as appropriate, in order to allow

effective widespread use of automated alphanumeric paging. The telephony server then transmits complete messages to the paging transmission system for onward transmission to the selected pager.

As an alternative to use of the telephone keypad, the numeric
5 codes can be spoken by the caller if the system has limited speech recognition ability including recognition of numbers and a few words such as "star" and "hash", and also possibly others such as "enter" and "help".

The present invention also provides an automated paging system
10 comprising a telephony server connected to a public or private telephone network with means for interacting with a caller and providing spoken feedback using an efficient entry code system for words and/or letters and phrases.

The present invention further provides a telephony server with
15 stored or created spoken words with storage of cognate forms that can be easily accessed and used to define customised messages.

From another aspect, the present invention provides a record of all messages within a time period with means via the telephony server of accessing such messages.

From a further aspect, the present invention provides an
20 automated paging system as described above with means for predefining messages in advance in order to provide notification of events such as meetings, birthdays, anniversaries or the like.

From a still further aspect, the present invention provides an
25 automated paging system as described above with a connection between the telephony server and a speech recognition means which may consist of automated equipment, human operators or a mixture in order to cost effectively allow limited vocabulary input.

The invention will now be described by way of an example with
30 reference to the accompanying single figure drawing which shows an automated paging system according to an embodiment of the invention, with optional features shown connected by broken lines.

Referring to the drawing, the preferred automated paging system comprises a telephony server 10 connected to a paging transmission
35 system 11 which can transmit to a multiplicity of pagers including a specific pager 12. The telephony server 10 is accessed from a telephone 13 via a telephone network 14.

The telephony server 10 may, for example, be a Telsis Hi-Call, particular features of which are described in International Patent Application Publication No. WO 92/22165. In that publication, the telephony server is referred to as a voice services equipment (VSE).
5 Other terms include voice response system (VRS) or interactive voice response (IVR) equipment.

The operation of the telephony server 10 will now be described in the context of automating alphanumeric message entry and transmission to pagers.

10 A caller wishing to send an alphanumeric message to the pager 12 would dial from the telephone 13 a telephone number that can be one or more predefined numbers or a telephone number related in some way to the pager number.

In the event that the pager number does not form some part or
15 part thereof of the telephone number dialled, then either a predefined pager will be selected based on some other information, which may be the caller's telephone number or other data, or at some time during the interaction between the caller and the telephony server the pager number will be entered.

20 The telephony server 10 will answer the call routed via the telephone network 14 and interact with the caller in order to accept in a manner acceptable for widespread use the input of alphanumeric messages for onward transmission via the paging transmission system 11 to the pager 12.

25 The telephony server 10 preferably includes a stored list of words (including personal names) for reading back to the caller, and also means for correlating numerical codes input by the caller with letters, words, and/or phrases, by means of which the equipment is able to decode messages entered by the use of a telephone dialling means,
30 such as a telephone keypad, and to read back the entered messages for confirmation of correct entry.

In order for effective alphanumeric input to occur it is made possible for the caller to form a message at the phrase, word or letter level. The telephony server 10 has the ability to interact with the
35 caller and the ability from pre-stored or generated data to speak back the phrase, word or letter entered, in the case of letter entry to speak back the word input, and in the case of phrase or word input to

speak back the phrase entered. If a word is input by means of letter entry and that word is in the spoken dictionary, then it will be spoken back as a word; otherwise it will be spelt using the input letters. In all cases, the complete message is read back to the caller before
5 transmission is confirmed.

The telephony server 10 in a particular embodiment contains spoken forms of all letters and predefined words and phrases in neutral and stressed form in order that effective feedback can be provided, as human communication relies on interactivity for its effectiveness. In
10 the particular embodiment, approximately 1,000 codes are used to define letters, words and phrases for use by a caller.

The general format of use provides for entry of a word, letter or phrase, using a numeric code followed by star.

A particular feature of this technique is that the system allows
15 simple input of the cognate form of words by stepping through the available set.

As an example,

519* would be used to transmit the word "man" and

519** would be used to transmit the word "men".

20 As a further example,

870* would be used to transmit the word "listen"

870** would be used to transmit the word "listened"

870*** would be used to transmit the word "listens"

870**** would be used to transmit the word "listening".

25 The telephony server 10 stores or generates all available cognate forms and this provides an effective means of simply customising messages.

Although the system provides for alphanumeric message input from a standard telephone handset with MF signalling, a number of handsets
30 now exist with 26 letter keys and the system can be adapted to work directly with letter key codes, whether audio or data, from such telephones with appropriate audio feedback.

In addition to the letters, words and phrases stored in the telephony server 10, the system may also provide for a large number of
35 first names to be stored so that these can be accessed and used as required.

In the normal mode of operation a message is sent as a sequence

of words and every time the star key is depressed the word or its cognate form, if available, is spoken to the caller. When message entry is complete, the complete message is read back to the caller for final confirmation before transmission to the pager 12 via the paging
5 transmission system 11, and in the event that the word is not present as a unit or cannot be created at the word level, it would be spelt out.

It is envisaged that the telephony server 10 may include, instead of or in addition to the stored list of words constituting the spoken
10 dictionary, means for generating words from pre-stored rules. In that case, only words not capable of being generated automatically will need to be spelt out.

It will be apparent that the ability to input letters, words, phrases, numbers and names by means of codes is made more powerful by
15 the use of cognate forms which can be accessed with simple keypresses. In a further variation of this technique, it is possible to utilise the cognate forms more flexibly; for example, if 519* is "man", 519** is "men", then 519**# will be "man"; in other words, the use of stars (*) results in upward movement through the cognate sequence and hashes (#)
20 downwards, except that the first non-numeric key press after a word input must be the star. The use of such an alphanumeric coding technique with the use of cognate forms offers a practicable means of automating alphanumeric paging in a reliable manner and, given the likely expansion in Caller Party Pays paging, this technique has
25 significant economic importance.

In certain cases, the message (or part thereof) read back by the telephony server 10 will be in a different form to that entered. One example arises when the message includes time or date information. Time information may, for example, be conveniently entered by a four
30 digit code, corresponding to the time expressed in 24 hour format, followed by a star; when read back, however, the time may be expressed in a.m./p.m. form. Similarly, date information may be entered by a six digit code, corresponding to the date expressed in day/month/year form (in the order preferred by the country in question); when read back,
35 however, the date may be specified by mentioning the name of the month and the complete year. Other examples include phrase constructions such as occur in French when words such as "que" and "il" together form

"qu'il". A possible form of entry in that case could involve entering the words separately, whereupon the system would recognise the combination from its set of rules and speak back "qu'il".

Although as described above, the system can be used for the
5 immediate transmission of messages, the addition of a database 15
allows reminder services to be offered as well. Thus, for example, by
the use of appropriate codes, the user could enter date/time dependent
reminders via the telephony server 10 to the database 15, for example
providing notification of meetings, birthdays, anniversaries and the
10 like; when the entered date/time matches the current date/time, the
appropriate reminder will be sent from the database 15 via the
telephony server 10 and the transmission system 11, or alternatively
direct from the database 15 to the transmission system 11, to the
required pager, which can be either the user's own pager or one
15 belonging to a third party.

The system can also be applied to the provision of contact
services. Thus, for example, if a message to a pager user, entered as
described above, gives an indication that the caller wishes to speak to
the pager user at that instant, a facility can be provided by the
20 telephony server 10 to hold the call (for example, for a predetermined
time) whereupon the pager user can telephone the system and be linked
up with the caller.

It is envisaged that as speech recognition technology improves,
it may be possible to include this facility to a limited extent in the
25 system. A speech recogniser 16 would then be associated via audio and
data links with the telephony server 10. It would accordingly be
possible to achieve message input by a mix of speech recognition and
entered codes, the codes being used when the speech recogniser 16 is
unable to identify a word being spoken.

30 It will be apparent from the above description of the use of the
letter/word/phrase codes that any person wishing to enter a message
normally requires access to a list of the code numbers associated with
each letter/word/phrase. In the event that people do not always have
access to this information, the system can incorporate a help facility
35 whereby the telephony server 10 can provide information on particular
codes. For example, a characteristic code can be used to invoke the
help mode which would be available at different levels. If, say, the

caller wanted the code of a word beginning with the letter 'C', the caller would enter 03* (each letter having a numerical value representing its place in the alphabet), whereupon the telephony server 10 would provide a list of codes for words beginning with 'C'. In this mode, it may be possible for the caller to terminate reproduction of the list, once the required code had been given. Alternatively, the system may just provide a spoken list of words which the caller can interrupt either by voice or by MF key input to select the required word. A "nudge" facility can also be provided so that the chosen word can be found by nudging on the stopped position either upwards or downwards.

Equipment users may require the system to have protection against misuse of the system by generation of nuisance or obscene messages. One or more of the following measures may be provided for this purpose.

15 The system may include call logging means such that a record of all entered messages is maintained. This is particularly useful where the incoming calls have calling line identification (CLI) so that the record of messages also identifies the calling telephone number. The system may include an unwanted word list in the telephony server 10 so that any attempt to enter an obscene (or otherwise objectionable) word in letter form would be identified and rejected by the system, this aspect constituting an unwanted word filter. Further, the system may include the ability to enable message entry in letter form only from telephone lines having CLI. Thus non-CLI callers would be able to

20 input word and/or phrase messages, but not compose words in letter form. This latter facility can be enhanced by restricting letter form message entry to CLI callers from telephones other than public payphones, where the telephone network provides the facility for these to be distinguished from other types of telephone. Still further, message entry could be restricted, either totally or at letter input level only, to callers having entered a correct PIN code.

Accordingly, in order to prevent the transmission of malicious or undesirable messages, either all forms of input or letter input may be restricted or monitored. As described above, input may only be allowed

35 when the caller has a correct PIN number, or alternatively letter input may only be allowed if the caller has the correct PIN number, or input may be restricted unless the calling party's CLI is available. In

circumstances where CLI may be provided for all phones including payphones, where available the calling party's category information may be used to restrict access from categories of telephone in order to allow effective monitoring of use and restrictions on the transmission
5 of unwanted or malicious messages.

As a further enhancement, the system when fitted with an unwanted or obscene word filter could keep a record of attempts to send words that failed the filter checks and where available log calling party information. This is potentially an important aspect of the system, as
10 the introduction of CLI in the fixed telephone network can significantly reduce the instance of malicious calls, and procedures to ensure the same quality of service in Calling Party Pays paging are therefore potentially important.

As discussed above, the telephone network 14 is a public network
15 but it will be apparent that communication between the telephones and the telephony server 10 could in appropriate circumstances be provided by a PABX system instead or as well.

If desired, the telephony server 10 can be set up to deliver a personalised acknowledgement or greeting when a caller rings in to
20 deliver a message for a particular user. This could be either by way of voice synthesis or could be a pre-recorded message. Other types of voice interaction can also be provided by the telephony server 10. For example, if personnel within a company each carry a pager, and the caller does not know an individual's number, it could be possible for
25 the caller to get the required information by specifying the company name, whereupon a list of numbers and associated personnel would be reproduced. This facility could also be available in a broader context to provide a "directory enquiries" type feature.

Although the invention has been described in the context of a
30 paging system whereby entered messages are communicated for display on selected pagers, it will be apparent that a similar technique can be used in any system requiring alphanumeric messages to be entered by telephone for onward transmission to a required party. Examples of other such systems include electronic mail systems, teletext systems
35 and SMS (short message service) telephone systems which provide displays on mobile telephones for the communication of alphanumeric information.

The following Table shows a list of possible codes for use in English language countries. The codes could of course be modified and/or supplemented as desired. Likewise, similar lists of codes could be compiled for different languages.

TABLE

ALPHABET

A.....	01*
B.....	02*
C.....	03*
D.....	04*
E.....	05*
F.....	06*
G.....	07*
H.....	08*
I.....	09*
J.....	10*
K.....	11*
L.....	12*
M.....	13*
N.....	14*
O.....	15*
P.....	16*
Q.....	17*
R.....	18*
S.....	19*
T.....	20*
U.....	21*
V.....	22*
W.....	23*
X.....	24*
Y.....	25*
Z.....	26*
space	27*
,	28*
.	29*
:	30*
-	31*
!	32*
?	33*
\$	34*

ACTIVITIES

badminton	51*
cricket	52*
cycling	53*
dancing.....	54*
football	55*
game.....	56*
gardening.....	57*
golf	58*
riding.....	59*
rugby	60*
running.....	61*

sailing	62*
shopping	63*
skating	64*
skiing	65*
sport	66*
squash.....	67*
tennis.....	68*
walking	69*

ADJECTIVES

attractive.....	70*
bad.....	71*
best	72*
better	73*
boring	74*
busy	75*
clean	76*
clear.....	77*
clever.....	78*
close	79*
cold.....	80*
cuddly.....	81*
dark	82*
difficult	83*
dirty.....	84*
dry	85*
earlier	86*
early.....	87*
easy.....	88*
elegant.....	89*
empty.....	90*
even.....	91*
fair	92*
false	93*
far	94*
fast.....	95*
first	96*
fit	97*
free	98*
full	99*
funny	100*
good.....	101*
gorgeous	102*
great	103*
happy.....	104*
hard	105*
healthy.....	106*
heavy	107*
high.....	108*

hot	109*
impossible.....	110*
kind.....	111*
last	112*
late	113*
later	114*
lazy	115*
light.....	116*
little	117*
lonely.....	118*
long.....	119*
loud.....	120*
lucky	121*
main.....	122*
mature.....	123*
medium.....	124*
middle.....	125*
mobile.....	126*
near.....	127*
new	128*
next.....	129*
nice	130*
noisy	131*
odd.....	132*
old.....	133*
open.....	134*
opposite	135*
other	136*
outgoing.....	137*
petite.....	138*
poor	139*
popular	140*
possible.....	141*
quick.....	142*
quiet.....	143*
ready.....	144*
rich	145*
right	146*
sad	147*
safe.....	148*
serious.....	149*
short.....	150*
shut.....	151*
shy	152*
silent	153*
simple	154*
slim	155*
slow	156*
social.....	157*
soft.....	158*

special	159*
sporty	160*
steady.....	161*
strong.....	162*
super	163*
sweet.....	164*
tall.....	165*
true	166*
unhappy	167*
upset	168*
urgent.....	169*
usual.....	170*
vivacious	171*
warm.....	172*
weak.....	173*
well	174*
wonderful.....	175*
worse	176*
worst.....	177*
wrong.....	178*
young.....	179*

BODY & CLOTHES

arm.....	180*
back	181*
blouse.....	182*
body	183*
bottom.....	184*
bra.....	185*
breast	186*
chest.....	187*
clothes.....	188*
coat	189*
dress.....	190*
ear.....	191*
eye	192*
face	193*
finger.....	194*
foot.....	195*
flu.....	196*
glasses	197*
hair.....	198*
hand	199*
hat.....	200*
head	201*
heart.....	202*
ill.....	203*
knee	204*
knickers.....	205*

TABLE (continued)

leg.....206*
 lips.....207*
 neck.....208*
 nose.....209*
 mouth.....210*
 pants.....211*
 shirt.....212*
 shoes.....213*
 shoulder.....214*
 sick.....215*
 skirt.....216*
 stomach.....217*
 toe.....218*
 trousers.....219*
 waist.....220*

COLOURS

auburn.....221*
 black.....222*
 blonde.....223*
 blue.....224*
 brown.....225*
 colour.....226*
 gold.....227*
 green.....228*
 grey.....229*
 hazel.....230*
 red.....231*
 silver.....232*
 white.....233*

DAY

monday.....234*
 tuesday.....235*
 wednesday.....236*
 thursday.....237*
 friday.....238*
 saturday.....239*
 sunday.....240*

FOOD & DRINK

american.....241*
 beer.....242*
 bottle.....243*
 bread.....244*
 breakfast.....245*
 burger.....246*

butter.....247*
 cake.....248*
 cheese.....249*
 chinese.....250*
 chips.....251*
 chocolate.....252*
 cocktail.....253*
 coffee.....254*
 cream.....255*
 dessert.....256*
 diet.....257*
 dinner.....258*
 dressing.....259*
 egg.....260*
 fish.....261*
 food.....262*
 french.....263*
 fruit.....264*
 ice-cream.....265*
 indian.....266*
 italian.....267*
 lunch.....268*
 meal.....269*
 milk.....270*
 pizza.....271*
 salad.....272*
 sandwich.....273*
 sauce.....274*
 seafood.....275*
 snack.....276*
 soup.....277*
 steak.....278*
 sugar.....279*
 supper.....280*
 sweet.....281*
 takeaway.....282*
 tea.....283*
 water.....284*
 wine.....285*

QUESTIONS

how.....286*
 what.....287*
 when.....288*
 where.....289*
 which.....290*
 who.....291*
 why.....292*

MISCELLANEOUS

a.....293*
 about.....294*
 above.....295*
 abroad.....296*
 access.....297*
 accident.....298*
 ache.....299*
 across.....300*
 address.....301*
 after.....302*
 afternoon.....303*
 again.....304*
 against.....305*
 age.....306*
 airport.....307*
 all.....308*
 always.....309*
 an.....310*
 another.....311*
 answer.....312*
 any.....313*
 anyone.....314*
 anything.....315*
 apart.....316*
 around.....317*
 arrival.....318*
 as.....319*
 at.....320*
 autumn.....321*
 away.....322*
 a.m.....323*
 back.....324*
 bag.....325*
 ball.....326*
 bank.....327*
 bar.....328*
 because.....329*
 bed.....330*
 bedroom.....331*
 before.....332*
 below.....333*
 beside.....334*
 bike.....335*
 bill.....336*
 bird.....337*
 birthday.....338*
 book.....339*
 bottom.....340*

box.....341*
 boy.....342*
 break.....343*
 bridge.....344*
 bright.....345*
 brother.....346*
 burn.....347*
 bus.....348*
 but.....349*
 buy.....350*
 by.....351*
 bye.....352*
 cab.....353*
 cafe.....354*
 cake.....355*
 call.....356*
 can.....357*
 car.....358*
 card.....359*
 case.....360*
 cassette.....361*
 cat.....362*
 catch.....363*
 CD.....364*
 chance.....365*
 channel.....366*
 chat.....367*
 check.....368*
 cheer.....369*
 cheque.....370*
 child.....371*
 choice.....372*
 christmas.....373*
 church.....374*
 cigarette.....375*
 cinema.....376*
 clearly.....377*
 close.....378*
 cloud.....379*
 cloudy.....380*
 club.....381*
 comedy.....382*
 college.....383*
 concert.....384*
 cook.....385*
 corner.....386*
 country.....387*
 cover.....388*
 crash.....389*
 credit.....390*

TABLE (continued)

cross..... 391*	for..... 441*	junction..... 491*	music..... 541*
cry..... 392*	fore..... 442*	just..... 492*	name..... 542*
dad..... 393*	friend..... 443*	kid..... 493*	need..... 543*
dance..... 394*	from..... 444*	kill..... 494*	neither..... 544*
darling..... 395*	front..... 445*	kilometer..... 495*	never..... 545*
date..... 396*	fun..... 446*	kiss..... 496*	news..... 546*
day..... 397*	game..... 447*	kitchen..... 497*	newspaper..... 547*
dear..... 398*	garage..... 448*	lane..... 498*	night..... 548*
debit..... 399*	garden..... 449*	laugh..... 499*	no..... 549*
dentist..... 400*	gas..... 450*	leave..... 500*	nobody..... 550*
departure..... 401*	gatwick..... 451*	left..... 501*	none..... 551*
details..... 402*	gift..... 452*	leisure..... 502*	noon..... 552*
dining..... 403*	gig..... 453*	letter..... 503*	no-one..... 553*
disco..... 404*	girl..... 454*	life..... 504*	nor..... 554*
distance..... 405*	glass..... 455*	light..... 505*	north..... 555*
doctor..... 406*	go..... 456*	like..... 506*	not..... 556*
dog..... 407*	goodbye..... 457*	line..... 507*	now..... 557*
door..... 408*	goods..... 458*	list..... 508*	number..... 558*
down..... 409*	graduate..... 459*	listen..... 509*	of..... 559*
drama..... 410*	group..... 460*	lock..... 510*	off..... 560*
dream..... 411*	guy..... 461*	london..... 511*	offer..... 561*
drink..... 412*	gym..... 462*	lounge..... 512*	office..... 562*
drive..... 413*	half..... 463*	love..... 513*	OK..... 563*
drizzle..... 414*	heathrow..... 464*	luck..... 514*	on..... 564*
dull..... 415*	height..... 465*	machine..... 515*	one..... 565*
east..... 416*	hello..... 466*	magazine..... 516*	only..... 566*
either..... 417*	help..... 467*	magic..... 517*	opera..... 567*
end..... 418*	here..... 468*	make..... 518*	opinion..... 568*
eve..... 419*	hi..... 469*	man..... 519*	or..... 569*
evening..... 420*	hit..... 470*	many..... 520*	other..... 570*
event..... 421*	hold..... 471*	match..... 521*	out..... 571*
ever..... 422*	hole..... 472*	meeting..... 522*	outdoor..... 572*
everyone..... 423*	holiday..... 473*	menu..... 523*	over..... 573*
ext..... 424*	home..... 474*	message..... 524*	overcast..... 574*
fact..... 425*	hope..... 475*	meter..... 525*	owner..... 575*
factory..... 426*	hospital..... 476*	midday..... 526*	pager..... 576*
family..... 427*	hotel..... 477*	midnight..... 527*	pain..... 577*
fax..... 428*	house..... 478*	mile..... 528*	paper..... 578*
feel..... 429*	humour..... 479*	minute..... 529*	parent..... 579*
few..... 430*	husband..... 480*	miss..... 530*	paris..... 580*
file..... 431*	ice..... 481*	model..... 531*	part..... 581*
film..... 432*	idea..... 482*	moment..... 532*	partner..... 582*
find..... 433*	idiot..... 483*	money..... 533*	party..... 583*
finish..... 434*	if..... 484*	month..... 534*	pen..... 584*
flat..... 435*	in..... 485*	moon..... 535*	people..... 585*
floor..... 436*	indoor..... 486*	morning..... 536*	perhaps..... 586*
flower..... 437*	interval..... 487*	motorway..... 537*	period..... 587*
fly..... 438*	into..... 488*	move..... 538*	person..... 588*
fog..... 439*	item..... 489*	much..... 539*	pet..... 589*
foggy..... 440*	job..... 490*	mum..... 540*	phone..... 590*

TABLE (continued)

pick.....591*	show641*	this 691*	work..... 741*
picture.....592*	shower642*	ticket..... 692*	world..... 742*
pint.....593*	sister643*	tie..... 693*	yard..... 743*
place.....594*	site.....644*	time..... 694*	year 744*
play.....595*	sky645*	to 695*	yes..... 745*
please596*	slowly646*	today..... 696*	yesterday..... 746*
position.....597*	smile647*	together..... 697*	
pound598*	snow648*	too 698*	MONTHS
present.....599*	so649*	tomorrow..... 699*	january 747*
price600*	soap650*	tonight 700*	february..... 748*
problem601*	softly.....651*	touch..... 701*	march 749*
programme602*	some652*	town..... 702*	april..... 750*
promise.....603*	someone653*	traffic 703*	may 751*
pub604*	something654*	train 704*	june 752*
pull605*	somewhere.....655*	travel..... 705*	july 753*
push.....606*	soon656*	trip 706*	august..... 754*
p.m.607*	sorry657*	try 707*	september..... 755*
question.....608*	sort658*	tube..... 708*	october..... 756*
queue.....609*	south.....659*	tunnel..... 709*	november 757*
quickly.....610*	speed660*	turn 710*	december 758*
quite.....611*	star.....661*	TV 711*	
race612*	start662*	type..... 712*	NUMBERS
radio613*	station.....663*	under 713*	0..... 0*
rain614*	stay664*	until 714*	1..... 1*
rainy615*	stew665*	up..... 715*	2..... 2*
range616*	stop.....666*	update..... 716*	3..... 3*
read617*	storm667*	very 717*	4..... 4*
relative618*	story.....668*	video 718*	5..... 5*
report619*	street.....669*	village 719*	6..... 6*
rest620*	student.....670*	visit 720*	7..... 7*
restaurant621*	summary671*	vote..... 721*	8..... 8*
ride622*	summer.....672*	wait..... 722*	9..... 9*
right.....623*	sun673*	walk 723*	
ring624*	sunny674*	wash..... 724*	PERSONAL
road625*	swim675*	watch 725*	I..... 759*
room.....626*	table.....676*	way 726*	you 760*
rose.....627*	take.....677*	weather..... 727*	he 761*
round.....628*	talk.....678*	wedding 728*	she..... 762*
roundabout.....629*	tape.....679*	week 729*	it..... 763*
run630*	taxi.....680*	weekend..... 730*	we 764*
rush631*	team.....681*	weight 731*	they 765*
save632*	television682*	west 732*	my 766*
school.....633*	thank.....683*	whenever 733*	your..... 767*
season.....634*	that684*	wherever 734*	his 768*
selection635*	the685*	wife 735*	her..... 769*
sense.....636*	theatre686*	will..... 736*	its 770*
series637*	then687*	winter 737*	our 771*
service638*	there688*	with..... 738*	
sex639*	thing689*	without 739*	
shop.....640*	think690*	woman 740*	

TABLE (continued)

me 772*	catch.....816*	leave 866*	shall..... 916*
him 773*	chat.....817*	let..... 867*	shop 917*
us..... 774*	clean.....818*	light..... 868*	show..... 918*
them 775*	clear.....819*	like..... 869*	shut 919*
mine 776*	close820*	listen 870*	sing..... 920*
their..... 777*	come.....821*	lock..... 871*	skate..... 921*
hers..... 778*	cook.....822*	lose 872*	ski..... 922*
don't..... 779*	could.....823*	love 873*	sleep..... 923*
I'd 780*	cover.....824*	lunch..... 874*	slip 924*
I'm 781*	credit825*	make 875*	smile..... 925*
I'll 782*	cry 826*	marry 876*	smoke 926*
I've 783*	dance827*	match 877*	snow..... 927*
it's..... 784*	date.....828*	mean 878*	sort..... 928*
he's..... 785*	debit829*	meet..... 879*	speed 929*
let's..... 786*	depart830*	might..... 880*	spend..... 930*
she's..... 787*	diet 831*	miss 881*	start..... 931*
that's..... 788*	disconnect832*	move 882*	stay..... 932*
	discover833*	must 883*	stop 933*
STAR SIGNS	do 834*	need 884*	study 934*
capricorn 789*	dream835*	offer 885*	swim..... 935*
aquarius..... 790*	dress836*	open..... 886*	take 936*
pisces..... 791*	drink837*	page 887*	talk 937*
aries..... 792*	drive838*	park..... 888*	tape 938*
taurus 793*	eat..... 839*	party 889*	tell..... 939*
gemini..... 794*	engage840*	pay..... 890*	thank 940*
cancer..... 795*	enter841*	permit 891*	think..... 941*
leo 796*	excite842*	phone..... 892*	tie..... 942*
virgo 797*	expect.....843*	pick..... 893*	touch..... 943*
libra 798*	fall 844*	play..... 894*	travel..... 944*
sagittarius 799*	fax..... 845*	postpone 895*	try 945*
scorpio..... 800*	feel..... 846*	practice..... 896*	turn 946*
	find 847*	promise 897*	type 947*
VERBS	finish.....848*	pull..... 898*	use..... 948*
access 801*	fit..... 849*	push 899*	video 949*
ache..... 802*	fly 850*	race..... 900*	visit 950*
am 803*	forget.....851*	rain 901*	vote 951*
arrive..... 804*	get..... 852*	read..... 902*	wait 952*
be 805*	give 853*	relax..... 903*	walk 953*
bike..... 806*	go..... 854*	remember..... 904*	want 954*
bill 807*	had..... 855*	report..... 905*	was..... 955*
book 808*	have..... 856*	require 906*	wash 956*
break 809*	hear 857*	ride 907*	watch 957*
burn..... 810*	hold 858*	ring 908*	went 958*
buy 811*	hope..... 859*	run 909*	will 959*
call..... 812*	invite.....860*	rush 910*	win 960*
can..... 813*	is 861*	save..... 911*	work..... 961*
cancel..... 814*	kiss..... 862*	say..... 912*	would 962*
carry 815*	know..... 863*	sell 913*	
	last..... 864*	send 914*	
	laugh..... 865*	service..... 915*	

TABLE (continued)**DATE****dd:mm:yy ... ddmmyy***

- a six digit code will send the date in
day:month:year format

TIME**hh:mm ...hhmm***

- a four digit code in the range 0000 to
2359 will send the time in hour:minute
format (24 hour clock).

NAME**"first name" ... nnnn***

- a four digit code in the range 3000 to
8999 will send an associated first name
(refer to name code list).

NUMBERS**number ... nnn ... n#**

- any digit string followed immediately by #
will send the preceding number.

STANDARD PHRASES

are you free?.....	974*
are you free tonight?.....	975*
are you free tomorrow?	976*
do you want to go out tonight?.....	977*
I'll be late	978*
I'll be there at.....	979*
I'll call later	980*
I love you.....	981*
I'm at home	982*
I'm at school.....	983*
I'm at work.....	984*
I'm leaving now	985*
I'm still at work.....	986*
I'm working late.....	987*
please call	988*
please call dad	989*
please call home	990*
please call me	991*
please call mum.....	992*
please call my mobile	993*
please call the office	994*
when are you free?	995*
when shall we meet?.....	996*
where are you?	997*
where shall we meet?.....	998*

LONG WORDS

announcement.....	963*
appointment.....	964*
conversation.....	965*
disconnected	966*
electricity	967*
entertainment.....	968*
information	969*
intelligent	970*
interesting	971*
professional	972*
unattractive	973*

OTHER COMMANDS

delete space....	010*
delete word	050*
ENTER	999*
HELP	000*

REPLY COMMANDS

YES.....	1
NO	0

CLAIMS

1. A communication system comprising means for decoding alphanumeric messages entered by the use of telephone dialling means, and means for
5 transmitting the alphanumeric messages to selected receivers having message displays, wherein the message decoding means comprises a telephony server operable to read back messages entered by the telephone dialling means for confirmation of correct entry.
- 10 2. A system according to claim 1, wherein the alphanumeric messages are entered by using numerical codes corresponding to letters, words and/or phrases.
- 15 3. A system according to claim 2, wherein the numerical codes are substantially as set out in the Table herein.
4. A system according to claim 2 or claim 3, wherein the words associated with particular codes can be modified into cognate form by further code entry.
20
5. A system according to claim 4, wherein the further code entry involves one or more inputs of the star or hash keys.
- 25 6. A system according to any one of the preceding claims, wherein the telephony server includes means for storing a list of words for reading back to the caller entering the message.
- 30 7. A system according to claim 6, wherein the telephony server is operable to read back a word in word form if included in the stored list irrespective of whether the word has been entered in letter or word form.
8. A system according to claim 6 or claim 7, wherein the telephony server is operable to read back a message upon completion of entry, any
35 words not included in the stored list being spelt.
9. A system according to any one of the preceding claims, wherein

the telephony server includes means for generating spoken words from pre-stored rules, and is operable to read back each entered word irrespective of whether the word has been entered in letter or word form.

5

10. A system according to claim 9, wherein the telephony server is operable to read back a message upon completion of entry, any words not capable of automatic generation by the word generating means being spelt.

10

11. A system according to any one of claims 6 to 8, wherein the stored list of words includes a list of personal names.

12. A system according to any one of the preceding claims, wherein
15 the telephony server is operable in accordance with a set of rules to read back messages in a different form to that entered.

13. A system according to claim 12, wherein the telephony server is
operable to read back time and/or date information in a.m./p.m. form
20 and/or day/month/year form upon entry in numerical form.

14. A system according to any one of the preceding claims, wherein
the telephony server includes a help facility for providing spoken
information as to operation of the system and/or details of particular
25 codes.

15. A system according to any one of the preceding claims, including
means for logging of entered messages.

30 16. A system according to any one of the preceding claims, wherein
the telephony server includes an unwanted word list and means for not
permitting confirmed entry of any word on the unwanted word list.

17. A system according to any one of the preceding claims, including
35 means for enabling entry of messages in letter form only from a
telephone connection providing calling line identification.

18. A system according to claim 17, wherein the enabling means is operable to enable letter form message entry only when the calling line identity connection is not from a public payphone.
- 5 19. A system according to any one of the preceding claims, including means for preventing entry of messages at least in letter form in the absence of entry of an approved PIN code.
20. A system according to any one of claims 1 to 19, wherein the
10 transmitting means and the receivers form part of a paging system.
21. A system according to any one of claims 1 to 19, wherein the transmitting means and the receivers form part of a mobile telephone system provided with a short message service facility.
- 15 22. A system according to any one of claims 1 to 19, wherein the transmitting means and the receivers form part of an electronic mail system or a teletext system.
- 20 23. A system according to any one of the preceding claims, including a database for storing time and/or date dependent messages and for forwarding each message via the transmitting means at the appropriate time and/or date to a selected receiver.
- 25 24. A system according to any one of the preceding claims, including a speech recogniser associated with the telephony server, allowing messages to be entered partially in spoken form and partially by the telephone dialling means.
- 30 25. A system according to any one of the preceding claims, wherein the telephony server is operable to hold an incoming call following message entry, and to link that call with a response call from the message recipient.
- 35 26. A communication system substantially as herein described with reference to the accompanying drawing.

Patents Act 1977**Examiner's report to the Comptroller under Section 17
(The Search report)**Application number
GB 9507752.5**Relevant Technical Fields**

(i) UK Cl (Ed.N) G4H (HNP)

(ii) Int Cl (Ed.6) H04Q

Search Examiner
M J DAVISDate of completion of Search
18 MAY 1995**Databases (see below)**

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii)

Documents considered relevant
following a search in respect of
Claims :-
1-26**Categories of documents**

- X:** Document indicating lack of novelty or of inventive step. **P:** Document published on or after the declared priority date but before the filing date of the present application.
- Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category. **E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- A:** Document indicating technological background and/or state of the art. **&:** Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2124419 A (NEC) whole document eg page 3 lines 92 to 112	1 at least

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